

## RIVERS AND FLOODS

[River and Flood Division, MERRILL BERNARD in charge]

NOTE.—The report for February will be published in the March REVIEW.—*Editor.*

## WEATHER ON THE ATLANTIC AND PACIFIC OCEANS

[The Marine Division, I. R. TANNEHILL in charge]

## NORTH ATLANTIC OCEAN, FEBRUARY 1939

By H. C. HUNTER

**Atmospheric pressure.**—The northernmost regions, particularly the northeastern, had pressure averaging considerably below normal, but with several rapid changes between high and low readings. At Reykjavik, Iceland, the deficiency of the monthly average was almost a third of an inch, and the highest reading of the month was but 30.00 inches. Over these regions pressure was generally low from the 3d to the 7th and again from the 20th to the end of the month.

Substantially all other parts of the North Atlantic had pressure above normal, especially the area from the Gulf of St. Lawrence southward and southeastward to the 30th parallel of latitude and the areas adjacent to or between the Iberian Peninsula and Madeira. At Horta decidedly low pressure during the first 10 days was followed by high pressure which was almost constant thereafter till the final day of the month.

The extremes of pressure noted in available vessel reports are 30.91 and 27.90 inches. The higher mark was recorded on the American steamship *Exira*, late on the forenoon of the 12th, near 39° N., 20° W. The low reading was reported by the Dutch liner *Noordam* as made at midnight of the 8–9th, at about 46° N., 37° W., when the vessel encountered the most notable Atlantic cyclone of the month.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, February 1939

Station	Average pressure	Departure	Highest	Date	Lowest	Date
	Inches	Inch	Inches		Inches	
Julianeab, Greenland.....	29.34	−0.19	30.20	27	28.62	23
Reykjavik, Iceland.....	29.22	−.32	30.00	1, 13	28.59	21
Lerwick, Shetland Islands.....	29.60	−.12	30.21	1	29.12	25, 26
Valencia, Ireland.....	29.95	+ .05	30.59	14	29.03	28
Lisbon, Portugal.....	30.22	+ .12	30.58	11	29.53	1
Madeira.....	30.24	+ .17	30.45	12	29.80	1
Horta, Azores.....	30.24	+ .09	30.64	16, 17	29.58	6
Belle Isle, Newfoundland.....	29.83	+ .12	30.48	14	29.12	23
Halifax, Nova Scotia.....	30.08	+ .17	30.58	10	29.46	16
Nantucket.....	30.08	+ .04	30.65	17	29.44	22
Hatteras.....	30.16	+ .05	30.59	17	29.54	6
Bermuda.....	30.25	+ .13	30.42	9	29.82	7
Turks Island.....	30.09	+ .01	30.18	13, 17	29.98	23
Key West.....	30.09	+ .02	30.29	12	29.95	3
New Orleans.....	30.08	−.01	30.59	22	29.66	8

<sup>1</sup> For 22 days.

NOTE.—All data based on a. m. observations only, with departures compiled from best available normals related to time of observation, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

**Cyclones and gales.**—The month was distinctly less turbulent than January just before it had been, yet the first half was a period of considerable storminess. From the beginning of the month until about the 11th one or more deep centers of low pressure were nearly always to be found in higher latitudes, chiefly to eastward of the 45th meridian, and reports of violent gales were numerous. On the 5th the American liner *President Roosevelt* en-

countered winds of hurricane force (12) near midocean, in latitude about 47°.

For the ocean as a whole the most important low of February was first noted as a weak center close to Hatteras on the morning of the 6th. On the following morning it was southeast of Cape Cod with much greater strength, and on the 8th it was near 44° N., 42° W., showing signs of uniting with another low to the northeastward. Developments came rapidly in the next few hours. On the morning of the 9th one center with pressure about 28 inches appeared on the chart near 48° N., 36° W., and a large area was under the influence of intense winds. This deep center then moved toward the north-northeast, its progress becoming rapid by the evening of the 10th, and soon the chief steamship lanes were free from its influence.

Within the area swept by the intense gales of this low, the British freight steamer *Maria de Larrinaga*, from Houston for the British Isles, sank with all hands during the night of the 8–9th, the position given in her call for aid being about 42° N., 47° W. Several vessels reported more or less structural damage from their encounter with this storm; also several were so delayed and expended so much fuel that they left their courses to make port for replenishing their supplies. The Belgian steamship *Gand* and the American *Sundance* reported winds of force 12 during the night of the 7–8th, when they were within the western semicircle of this storm.

There was one later instance of force-12 winds this month, reported by the German motorship *Kattegat*, west-bound, in latitude 31° N., longitude 47° W., on the evening of the 10th.

About the middle of the month, and again about the 22d, waters close to the American coast were swept by storms which advanced so nearly northward that most portions of the North Atlantic were unaffected. Charts XIII and XIV show the conditions on the 16th and the 22d, respectively. The center of the earlier of these lows was over Pennsylvania on the morning of the 15th, thence moved to southern Labrador and on the 17th was near southern Greenland. A squall probably connected with this low disabled a small trawler off Cape Henry, and necessitated its being towed to port.

The second of these western cyclones was centered over Chesapeake Bay on the evening of the 21st, with only moderate strength, but was much stronger the next morning when east of Cape Cod. The following morning found it near the east coast of Labrador, whence it traveled on to southeastern Greenland in the next 24 hours.

**Fog.**—While fog was not very prevalent, yet substantially all portions of the North Atlantic to northward of 40° latitude, as well as portions just east of the United States coast had more than during January just preceding.

From the 60th meridian eastward to the eastern limits of the Grand Banks there was less fog than normal in February, and indeed before the 21st there was scarcely any. In midocean fog was almost completely absent, but

from the region of the Azores to the coasts of the British Isles and France a little fog was met, chiefly during the first 12 days. No single 5° square in the areas from 60° eastward had fog on more than 4 days.

Near the American coast from Nova Scotia to Hatteras there was about as much fog as in the average February, and the occurrences were well scattered through the month. However, one square here, 35° to 40° N., 70° to 75° W., went far beyond the average amount, having fog on 11 days, so that it surpassed all other North Atlantic areas in fog frequency.

From Hatteras to the southern tip of Florida, fog was, as usual, very infrequent. In the northern Gulf of Mexico there generally was more than the February normal

amount. The northwestern portion, 25° to 30° N., 90° to 95° W., led other Gulf areas, having 7 foggy days, all during the first half of the month; but this was less fog than had occurred there during January.

Several mishaps in American waters are laid to the fog. During the 2d and 3d, three collisions occurred in New York harbor and the Delaware River. Late on the 26th the American freight steamer *Lillian* was greatly damaged in collision off the coast of New Jersey, and sank about 18 hours later, without loss of life.

The American tanker *Lighburne* grounded off Block Island during fog on the evening of the 9th. All hands were saved and even part of the cargo, but the vessel itself will be almost surely a total loss.

## OCEAN GALES AND STORMS, FEBRUARY 1939

Vessel	Voyage		Position at time of lowest barometer		Gale began February	Time of lowest barometer, February	Gale ended February	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Silverteak, Br. M. S.	Dakar	Halifax	35 26 N.	56 29 W.	1 31	Noon, 1.	2	29.72	SW	WNW, 10.	NNW	WNW, 10.	W-NW.
Exeter, Am. S. S.	New York	Gibraltar	39 54 N.	38 00 W.	1	9p, 1.	2	29.44	SW	SW, 8.	SW	SW, 9.	SW-W.
Oakwood, Am. S. S.	Beaumont	Hayre	32 59 N.	49 19 W.	2	1a, 2.	3	28.98	W	W, 7.	NW	NW, 10.	SW-WNW.
W. S. Rheem, Am. S. S.	Ostermoor	Cristobal	34 18 N.	36 50 W.	2	4a, 3.	3	29.77	SW	SW, 8.	WNW	WNW, 10.	SW-WNW.
Belgian Gulf, Belg. M. S.	Port Arthur	London	44 08 N.	26 50 W.	3	10p, 3.	4	29.40	SSW	S, 10.	SSW	S, 10.	S-SW.
Exmoor, Am. S. S.	New York	Casablanca	36 55 N.	46 37 W.	3	2a, 5.	6	29.42	WSW	SW, 10.	W	SW, 10.	WSW-SW.
Washington, Am. S. S.	Cobh	New York	47 58 N.	39 25 W.	5	4p, 5.	6	28.10	E	Var., 6.	WNW	NW, 10.	ENE-Var-NNW.
Pres. Roosevelt, Am. S. S.	New York	Cobh	46 50 N.	37 50 W.	5	6p, 5.	6	28.10	SW	W, 10.	SW	W, 12.	SSW-WNW.
Schuylikill, Br. M. S.	Plymouth	Cristobal	40 10 N.	29 12 W.	5	7p, 5.	6	29.35	S	SW, 9.	W	SW, 10.	SSW-W.
Exiria, Am. S. S.	New York	Gibraltar	39 20 N.	45 00 W.	7	6p, 7.	9	28.96	S	S, 7.	WSW	W, 10.	S-SW.
Gand, Belg. S. S.	New Orleans	Hayre	40 06 N.	57 08 W.	7	9p, 7.	9	28.81	E	N, 12.	NNW	N, 12.	SW-N.
Sundance, Am. S. S.	Charleston	Avonmouth	41 18 N.	55 30 W.	7	10p, 7.	9	28.59	E	NNE, 12.	NW	NNE, 12.	E-N.
Express, Am. S. S.	Gibraltar	New York	35 21 N.	47 55 W.	7	3a, 8.	8	29.29	SW	SW, 10.	NW	WNW, 10.	S-WNW.
Tablan, Du. M. S.	Sabang	Halifax	33 54 N.	45 40 W.	8	9a, 8.	9	29.46	SW	WSW, 9.	NW	W, 10.	SW-W.
Barendrecht, Du. M. S.	Cristobal	Rotterdam	35 54 N.	38 47 W.	8	3p, 8.	8	29.44	SW	W, 8.	W	SW, 10.	SW-W.
Europe, Nor. M. S.	Port Arthur	Liverpool	41 44 N.	37 12 W.	7	6p, 8.	10	28.72	SSW	SSW, 11.	SSW	SSW, 11.	SSW-WSW.
Atlanta City, Am. S. S.	Gibraltar	New York	35 11 N.	35 53 W.	8	7p, 8.	10	29.57	SW	SSW, 10.	W	SSW, 10.	SSW-W.
American Trader, Am. S. S.	New York	Plymouth	46 00 N.	39 18 W.	8	10p, 8.	10	28.40	E	SSE, 3.	SSW	SW, 11.	SSW-Var-WSW.
Noordam, Du. M. S.	do	Rotterdam	46 21 N.	36 47 W.	8	Mdt, 8.	9	27.90	ENE	SSW, 8.	S	SW, 9.	SSE-SW.
American Farmer, Am. S. S.	London	Boston	48 10 N.	33 56 W.	9	4a, 9.	9	28.33	S	S, 8.	SSW	SSW, 11.	ESE-S-SSW.
Zaandam, Du. M. S.	Rotterdam	New York	47 28 N.	37 27 W.	7	4a, 9.	10	28.12	SSW	SSE, 3.	NNW	NW, 10.	SSE-NW.
Scanmail, Am. S. S.	New York	Gothenburg	42 18 N.	46 48 W.	9	Noon, 9.	10	29.49	W	NNW, 9.	N	NW, 10.	NNW-WNW.
Black Condor, Am. S. S.	Chester, Pa.	Rotterdam	40 20 N.	65 25 W.	9	2p, 9.	10	30.19	WSW	NW, 7.	N	NNW, 9.	WSW-WNW.
Gand, Belg. S. S.	New Orleans	Hayre	41 28 N.	51 36 W.	10	4a, 10.	11	29.89	NNE	NNE, 7.	NNE	NNE, 9.	NNE-9.
Tablan, Du. M. S.	Sabang	Halifax	37 10 N.	50 14 W.	10	6a, 10.	10	29.45	WNW	WNW, 9.	N	WNW, 9.	WNW-NNE.
Express, Am. S. S.	Gibraltar	New York	35 02 N.	52 36 W.	10	8a, 10.	10	29.76	WNW	NW, 10.	N	NW, 10.	WNW-NNW.
Zaremba, Am. S. S.	New York	Dakar	30 54 N.	44 42 W.	10	4p, 10.	10	29.58	WSW	WNW, 9.	WNW	WNW, 10.	NW-SW-NW.
Schuylikill, Br. M. S.	Plymouth	Cristobal	31 00 N.	42 30 W.	10	5p, 10.	11	29.59	SW	W, 8.	NW	NW, 10.	SW-WNW.
Kattegat, Ger. M. S.	Rotterdam	Baytown	51 14 N.	46 50 W.	10	7p, 10.	11	29.49	W	NW, 11.	NNW	NNE, 12.	WNW-NNE.
Atlanta City, Am. S. S.	Gibraltar	New York	35 10 N.	39 54 W.	11	2a, 11.	12	29.10	NNE	N, 4.	NE	N, 9.	W-NE.
Steel Seafarer, Am. S. S.	do	Boston	35 30 N.	44 48 W.	10	4p, 11.	11	29.41	S	S, 8.	S	S, 10.	S-S.
Baarn, Du. S. S.	Curacao	Liverpool	35 30 N.	44 48 W.	10	4p, 11.	11	29.22	NNW	N, 9.	NNE	NNW, 10.	NNW-NNE.
Exiria, Am. S. S.	New York	Gibraltar	37 36 N.	12 00 W.	13	5p, 13.	13	30.29	NNE	NNE, 7.	NNE	NNE, 9.	NNE-9.
American Shipper, Am. S. S.	Belfast	Boston	54 32 N.	22 09 W.	14	8p, 14.	15	29.74	SSW	SSW, 7.	W	W, 11.	SSW-SW.
Scanmail, Am. S. S.	New York	Gothenburg	58 08 N.	12 11 W.	15	5p, 15.	16	29.41	SW	W, 8.	W	WSW, 9.	WSW-W.
American Shipper, Am. S. S.	Belfast	Boston	53 37 N.	28 51 W.	16	4p, 16.	17	29.88	SW	SW, 9.	WSW	WSW, 9.	WSW-WSW.
do	do	do	50 10 N.	42 22 W.	19	4p, 19.	20	29.18	SSW	SW, 11.	WNW	SW, 11.	SW-W.
Scanstades, Am. S. S.	Copenhagen	New York	53 30 N.	32 00 W.	19	6a, 20.	21	29.03	SW	WSW, 9.	WNW	SW, 10.	SW-WSW.
Mormacsun, Am. S. S.	do	Boston	57 03 N.	23 30 W.	23	2a, 23.	23	29.25	W	WNW, 9.	WNW	NW, 10.	W.
do	do	do	55 45 N.	29 00 W.	24	6a, 24.	26	29.40	W	WSW, 7.	W	W, 11.	S-W.
Manhattan, Am. S. S.	Cobh	New York	49 06 N.	31 18 W.	27	10a, 27.	27	29.78	WNW	W, 10.	WSW	NW, 11.	W-WNW.
Black Condor, Am. S. S.	Antwerp	do	50 10 N.	9 10 W.	28	10a, 28.	28	29.27	W	W, 7.	WSW	NW, 10.	W-NW.
Manhattan, Am. S. S.	Cobh	do	47 18 N.	38 00 W.	28	10a, 28.	4 1	29.14	SSW	WSW, 10.	NW	WNW, 10.	SSW-N.
NORTH PACIFIC OCEAN													
Ixion, Br. S. S.	Yokohama	Vancouver, B. C.	50 01 N.	155 30 W.	1 31	13p, 31.	2	29.12	W	SSW, 6.	NW	W, 10.	SSE-SSW.
Heian Maru, Jap. M. S.	do	do	50 42 N.	160 18 W.	1	1p, 31.	2	29.16	WNW	NE, 4.	NW	WNW, 8.	ESE-E-ESE.
Maunalei, Am. S. S.	Honolulu	San Francisco	24 18 N.	153 20 W.	2	2p, 2.	2	29.90	SE	E, 8.	ESE	E, 8.	None.
La Placencia, Am. S. S.	Vancouver, B. C.	Port San Luis	47 10 N.	125 15 W.	2	6p, 2.	2	29.49	SE	SE, 8.	SE	SE, 9.	None.
Ludington, U. S. A. T.	Honolulu	Midway Is.	27 21 N.	176 41 W.	2	6a, 2.	4	29.82	S	NNE, 8.	E	NNE, 11.	SSW-NNE.
Mapele, Am. S. S.	Portland, Ore.	Honolulu	43 24 N.	129 54 W.	1	2p, 2.	4	29.66	SSE	W, 8.	NNW	NNW, 8.	W-WNW.
Charcas, Am. S. S.	Acajutla	Salina Cruz	15 37 N.	93 41 W.	3	4p, 3.	5	29.81	NW	WNW, 3.	NNE	N, 10.	WNW-NW.
Manoeran, Du. M. S.	Legaspi, P. I.	Los Angeles	33 12 N.	159 54 E.	4	2p, 4.	5	29.30	WSW	WSW, 7.	W	W, 9.	SSW-WNW.
Dalblair, Br. S. S.	San Francisco	Milke	31 — N.	140 — E.	5	11p, 5.	8	29.64	S	NNW, 10.	NW	NNW, 10.	SSE - NNW
Kunikawa Maru, Jap. M. S.	Yokohama	San Francisco	45 45 N.	173 28 E.	6	Noon, 9.	—	28.53	ESE	S, 5.	—	SE, 9.	ESE-SW.
Maliko, Am. S. S.	San Francisco	Honolulu	37 26 N.	123 47 W.	7	8p, 7.	8	29.81	W	W, 8.	NW	NW, 10.	W-WNW.
Maunalei, Am. S. S.	Honolulu	San Francisco	37 06 N.	125 12 W.	8	3p, 8.	8	30.00	NW	NW, 8.	NW	NW, 8.	S-SW.
Manoeran, Du. M. S.	Legaspi, P. I.	Los Angeles	42 12 N.	160 00 W.	8	11p, 9.	10	29.38	SSW	S, 9.	SW	S, 10.	S-SW.
Nastro Maru, Jap. M. S.	Shanghai	San Pedro	43 12 N.	175 24 W.	9	Mdt, 9.	10	29.24	WSW	WSW, 8.	WSW	WSW, 8.	WSW, 8.

1 January.

2 Position approximate.

3 Barometer uncorrected.

4 March.